

CLAIMS

1. A peptide consisting of 10 - 25 contiguous amino acids in the amino acid sequence of human WT1 shown in SEQ ID NO: 1, which binds to HLA-DRB1*0405 and induces helper T cells.
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2. The peptide of claim 1, which comprises an amino acid sequence set forth in any one of SEQ ID NOS: 2 - 23.
3. The peptide of claim 2, which comprises the amino acid sequence set forth in SEQ ID NO: 24.
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4. A peptide of 10 - 25 amino acids, which comprises an amino acid sequence wherein the amino acid residue at position 1, 4, 6 and/or 9 of an amino acid sequence set forth in any one of SEQ ID NOS: 2 - 23 is substituted by another amino acid residue, and which binds to an HLA-DRB1*0405 and induces helper T cells.
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5. The peptide of claim 4, which comprises an amino acid sequence wherein the amino acid residue at position 1, 4, 6 and/or 9 of an amino acid sequence set forth in any one of SEQ ID NOS: 2 - 23 is substituted by an amino acid residue selected from the following amino acids:
20 phenylalanine, tyrosine, tryptophan, valine, isoleucine, leucine and methionine for the position 1;
valine, isoleucine, leucine, methionine, aspartic acid and glutamic acid for the position 4;
asparagine, serine, threonine, glutamine, lysine and aspartic acid for the position 6; and
25 aspartic acid, glutamic acid and glutamine for the position 9.
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6. The peptide of claim 5, which comprises an amino acid sequence wherein the amino acid residue at position 3, 6, 8 and/or 11 of the amino acid sequence set forth in SEQ ID NO: 24 is substituted by an amino acid residue selected from the following amino acids:

phenylalanine, tryptophan, valine, isoleucine, leucine and methionine for the position 3;

valine, isoleucine, methionine, aspartic acid and glutamic acid for the position 6;

5 asparagine, serine, threonine, glutamine, lysine and aspartic acid for the position 8; and

aspartic acid, glutamic acid and glutamine for the position 11.

7. A peptide comprising a peptide described in any one of claims 1 to 6 together with a cancer antigen peptide.

10 8. A polynucleotide encoding a peptide described in any one of claims 1 to 7.

9. An expression vector containing the polynucleotide described in claim 8.

10. A cell containing the expression vector described in claim 9.

15 11. A process for producing a peptide described in any one of claims 1 to 7, which comprises culturing the cell described in claim 10 under the condition where the peptide can be expressed.

12. An antibody which specifically binds to a peptide described in any one of claims 1 to 6.

20 13. A pharmaceutical composition which comprises a peptide described in any one of claims 1 to 7, an expression vector described in 9 or a cell described in claim 10, in association with a pharmaceutically acceptable carrier.

25 14. The pharmaceutical composition of claim 13, which is a therapeutic or preventive agent for cancer.

30 15. The pharmaceutical composition of claim 13, which is an inducer of helper T cells, and which comprises a peptide described in any one of claims 1 to 6; an expression vector described in claim 9 related to a peptide of any one of claims 1 to 6; or a cell described in claim 10 related to a peptide of any one of claims 1 to 6, in association with a

pharmaceutically acceptable carrier.

16. The pharmaceutical composition of claim 13, which is an enhancer of cancer vaccine efficacy, and which comprises a peptide described in any one of claims 1 to 6; an expression vector described in claim 9 related to a peptide of any one of claims 1 to 6; or a cell described in claim 10 related to a peptide of any one of claims 1 to 6, in association with a pharmaceutically acceptable carrier.

17. The pharmaceutical composition of claim 13, which is a therapeutic or preventive agent for cancer, and which comprises a peptide described in claim 7; an expression vector described in claim 9 related to a peptide of claim 7; or a cell described in claim 10 related to a peptide of claim 7, in association with a pharmaceutically acceptable carrier.

18. Use of a peptide described in any one of claims 1 to 7, an expression vector described in claim 9 or a cell described in claim 10 for the manufacture of a therapeutic or preventive agent for cancer.

19. A method of treating or preventing cancer, which comprises administering a peptide described in any one of claims 1 to 7, an expression vector described in claim 9 or a cell described in claim 10 to a subject in need thereof.

20. A pharmaceutical composition which comprises a peptide described in any one of claims 1 to 6 in combination with a cancer antigen peptide.

21. The pharmaceutical composition of claim 20, which is used for treating or preventing cancer.

22. A kit for treating or preventing cancer, which comprises a pharmaceutical composition comprising a peptide of any one of claims 1 to 6 in association with a pharmaceutically acceptable carrier, and a pharmaceutical composition comprising a cancer antigen peptide in association with a pharmaceutically acceptable carrier.

23. Use of a peptide of any one of claims 1 to 6 in combination

with a cancer antigen peptide in the manufacture of a therapeutic or preventive agent for cancer.

24. A method of treating or preventing cancer, which comprises administering a peptide of any one of claims 1 to 6 in combination with a 5 cancer antigen peptide to a subject in need thereof.